

What is claimed is:

1           1.     A method of performing parallel data operations upon data in a  
2 database, comprising:  
3                 receiving a data transaction request in a client system; and  
4                 executing a plurality of multi-phase parallel tasks in response to the  
5 request to perform the data operations upon the data in the database.

1           2.     The method of claim 1, wherein receiving a data transaction  
2 request comprises receiving a request for loading data into the database.

1           3.     The method of claim 1, wherein receiving a data transaction  
2 request comprises receiving a request to perform a data transformation  
3 operation upon the data in the database.

1           4.     The method of claim 3, wherein receiving a request to perform the  
2 data transformation operation comprises receiving a request to perform one of a  
3 data selection operation, a data validation operation, a data cleansing operation,  
4 and a data query operation.

1           5.     The method of claim 1, wherein executing the multi-phase parallel  
2 tasks comprises executing each of the parallel tasks in one or more phases.

1           6.     The method of claim 5, comprising executing a first parallel task in  
2 a first number of phases and a second parallel task in a second number of  
3 phases.

1           7.     The method of claim 5, further comprising each parallel task  
2 providing a code to indicate if the task is to be re-invoked in the next phase

1           8.     The method of claim 7, wherein providing the code comprises  
2 providing the code to a task coordinator.

1           9.     The method of claim 8, wherein the code comprises a first code to  
2 indicate that the task coordinator is to invoke a component in the next phase.

1           10.    The method of claim 8, wherein the code comprises a second code  
2 to indicate that the task is not to invoke a component in the next phase.

1           11.    The method of claim 1, further comprising:  
2               analyzing the transaction request;  
3               creating a task plan in response to the transaction request;  
4               implementing the task plan in a multi-phase organization;  
5               executing a plurality of tasks in parallel, in response the launching  
6 of the task coordinator function;  
7               determining whether an additional phase is required in order  
8 execute the task; and  
9               scheduling an additional phase in response to the determination  
10 that an additional phase is required.

1           12.    The method of claim 11, wherein implementing the task plan  
2 comprises creating a job script.

1           13.    The method of claim 11, wherein implementing the task plan  
2 comprises:  
3               translating the task plan;  
4               selecting a plurality of components to implement the translated  
5 task plan;  
6               assigning a plurality of processes corresponding to the  
7 components; and

8 creating a communications channel to allow for communications  
9 between the processes.

1 14. The method of claim 13, wherein selecting the plurality of  
2 components to implement the translated task plan comprises selecting the  
3 plurality of components to perform at least one of a data extraction operation, a  
4 data transformation operation, and a data loading operation.

1 15. An apparatus, comprising:  
2 a user interface;  
3 a processor coupled with the user interface, wherein the processor  
4 receives a data transaction request from the user interface; and  
5 a controller coupled with the processor, wherein the controller  
6 performs a number of tasks in parallel based upon instructions received from the  
7 processor, each task performed in a plurality of phases.

1 16. The apparatus of claim 15, wherein the processor generates a task  
2 plan in response to the data transaction request.

1 17. The apparatus of claim 16, wherein the controller comprises a task  
2 coordinator to execute the task plan.

1 18. The apparatus of claim 16, wherein the controller further comprises  
2 a plurality of components to implement the task plan in parallel.

1 19. The apparatus of claim 18, further comprising a communications  
2 interface for enabling communications between the components.

1 20. The apparatus of claim 18, wherein the controller further comprises  
2 a storage unit for storing methods and functions to execute the task plan.

1           21.    The apparatus of claim 15, wherein the a controller coupled with  
2   the processor, wherein the controller performs a number of tasks in parallel  
3   based upon instructions received from the processor, each task performed in a  
4   plurality of phases further comprises the controller performing the tasks in a  
5   sequence of multiple process steps.

1           22.    A system, comprising:  
2                   a database system; and  
3                   a client system to implement a plurality of data operations upon the  
4   database in parallel.

1           23.    The system of claim 22, wherein the database system is a relational  
2   database system.

1           24.    The system of claim 23, wherein the database system is a parallel  
2   database system.

1           25.    The system of claim 22, wherein client system comprises:  
2                   a processor to receive a data transaction request;  
3                   a plurality of operators to perform parallel data operations in  
4   response to the data transaction request;  
5                   an operator interface coupled to the operators, wherein the  
6   operator interface allows communications between the operators.

1           26.    The system of claim 22, wherein the processor performs data  
2   parsing and data compiling upon the data in the database system.

1           27.    The system of claim 22, wherein the operators perform at least one  
2   of a data extraction function, a data transform function, and a data loading  
3   function.

1           28.    An article comprising at least one storage medium containing  
2 instructions that when executed cause a client system to:  
3                receive a data transaction request; and  
4                execute a plurality of parallel tasks in response to the request to  
5 perform data operations upon the data in the database over a network  
6 connection.

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2 cause the client system to execute each of the parallel tasks in one or more  
3 phases.

1           30.    The article of claim 29, wherein the instructions when executed  
2 cause the client system to execute a first parallel task in a first number of phases  
3 and a second parallel task in a second number of phases.

1           31.    The article of claim 29, wherein the instructions when executed  
2 cause each parallel task to provide a code to indicate if the task is to be re-  
3 invoked in the next phase.

1           32.    The article of claim 31, wherein the instructions when executed  
2 cause the parallel task to provide the code to a task coordinator.

1           33.    The article of claim 32, wherein the code comprises a first code to  
2 indicate that the task coordinator is to invoke a component in the next phase.

1           34.    The article of claim 32, wherein the code comprises a second code  
2 to indicate that the task is not to invoke the component in the next phase.

1           35.    A method of performing parallel data operations upon data in a  
2 database, comprising:  
3                receiving a data transaction request; and

4                   executing a plurality of synchronized multi-phase parallel tasks in  
5 response to the request to perform the data operations upon the data in the  
6 database.

1           36.   The method of claim 35, wherein executing the multi-phase parallel  
2 tasks comprises executing each of the parallel tasks in one or more phases.

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1           37.   The method of claim 36, comprising executing a first parallel task in  
2 a first number of phases and a second parallel task in a second number of  
3 phases.

1           38.   The method of claim 36, further comprising each parallel task  
2 providing a code to indicate if the task is to be re-invoked in the next phase.

1           39.   The method of claim 38, wherein providing the code comprises  
2 providing the code to a task coordinator.

1           40.   The method of claim 39, wherein the code comprises a first code to  
2 indicate that the task coordinator is to invoke a component in the next phase.

1           41.   The method of claim 39, wherein the code comprises a second  
2 code to indicate that the task is not to invoke a component in the next phase.

1           42.   The method of claim 39, wherein the code synchronizes the  
2 operation of one or more component.

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